

CLAIMS

What is claimed is:

1. A monitor including a monitor main body displaying an image thereon, and a base member supporting the monitor main body, the monitor comprising:
 - a base hinge coupled to the base member;
 - a lower link member rotatably combined to the base hinge provided in the base member;
 - a monitor hinge coupled to the monitor main body;
 - an upper link member rotatably combined to the monitor hinge coupled to the monitor main body;
 - a link hinge provided between the upper link member and the lower link member to allow the upper link member to rotate relative to the lower link member; and
 - a first auxiliary link member disposed parallel to the lower link member at a first position deviated from first axes of the link hinge and the base hinge to connect the lower link member with the upper link member through the link hinge and transmit a rotary motion from the lower link member relative to the base member to the upper link member through the link hinge.

2. The monitor according to claim 1, further comprising:
 - a second auxiliary link member disposed parallel to the lower link member at a second position deviated from second axes of the link hinge and the base hinge to connect the link hinge with the base member; and
 - a third auxiliary link member disposed parallel to the upper link member at a third position deviated from third axes of the monitor hinge and the link hinge to connect the monitor hinge with the link hinge.

3. The monitor according to claim 1, further comprising:
 - a base bracket combined to the base member to install the base member onto an inclined plane, wherein the base bracket comprises at least one hook, and the base member comprises at least one hook hole receiving the hook to latch the base bracket to detachably combine the base bracket to the base member.

4. The monitor according to claim 3, wherein the base bracket comprises:
 - at least one first combining hole to install the base bracket to the inclined plane.

5. The monitor according to claim 4, wherein:

the base bracket comprises,

at least one second combining hole to be combined with the base member; and

the base member comprises,

a third combining hole corresponding to the second combining hole.

6. The monitor according to claim 5, wherein the second combining holes of the base bracket and the third combining hole of the base member are formed according to a VESA regulation.

7. The monitor according to claim 2, further comprising:

a base bracket combined to the base member to install the base member onto an external inclined plane, wherein the base bracket comprises at least one hook, and the base member comprises at least one hook hole receiving the at least one hook to latch the base bracket so as to be detachably combine the base bracket to the base member.

8. The monitor according to claim 2, further comprising:

first and second base brackets spaced-apart from each other and combined to the base member, wherein the base hinge comprises first and second base hinge parts rotatably connecting lower opposite parts of the lower link member to the first and second base brackets, respectively.

9. The monitor according to claim 8, wherein the first base hinge part comprises:

a hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a pin accommodating part formed on one of the lower opposite parts of the lower link member to accommodate the first end of the first hinge pin to be rotatable therein; and

a pin holding part formed on one side of the first base bracket and fitting the second end of the first hinge pin therein.

10. The monitor according to claim 9, wherein the first base hinge part comprises:

a friction spring disposed between the pin accommodating part and the first end of the hinge pin to resist a rotation of the hinge pin.

11. The monitor according to claim 8, wherein the first base bracket comprises:
a spring supporting part protruding from one side thereof ; and
a torsion spring disposed on the spring supporting part to be elastically biased in an opposite direction to a downward rotation of the lower link member relative to the base member.

12. The monitor according to claim 8, wherein the second base hinge part comprises:
a hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a pin accommodating part formed on a lower part of the lower link member to accommodate the first end of the hinge pin rotatable therein; and

a pin holding part formed on one side of the second base bracket and fitting the second end of the hinge pin therein.

13. The monitor according to claim 12, wherein the second base hinge part comprises:

a rotation restricting part provided at least one of the first and second base hinge parts to restrict a rotation of the lower link member relative to the base member within a predetermined angle range.

14. The monitor according to claim 13, wherein the rotation restricting part comprises:

a pair of stoppers formed by cutting a groove from one of the lower opposite parts of the lower link member around the second pin accommodating part to face each other, and

a pair of projections provided around the pin holding part formed on the side of the second base bracket to selectively stop a movement of the second base hinge part by one of the first stoppers according to a rotating direction of the lower link member.

15. The monitor according to claim 8, wherein the link hinge comprises:
first and second link hinge parts rotatably connecting upper opposite parts of the lower link member with lower opposite parts of the upper link member, respectively.

16. The monitor according to claim 15, wherein the first link hinge part comprises:
a first hinge axle combined to one of the lower opposite parts of the upper link member

and one of the upper opposite parts of the lower link member to rotatably connect the one lower opposite part of the upper link member with the one upper opposite part of the lower link member;

a first axle accommodating part formed on the one upper opposite part of the lower link member to receive the first hinge axle rotatable therethrough; and

a first axle holding part formed on the one lower opposite part of the upper link member and combined with a first end of the first hinge axle to rotate coincidentally with the upper link member.

17. The monitor according to claim 16, wherein the second link hinge part comprises:

a second hinge axle combined to the other one of the lower opposite parts of the upper link member and the other one of the upper opposite parts of the lower link member to rotatably connect the other lower opposite part of the upper link member with the other upper opposite part of the lower link member;

a second axle accommodating part formed on the other upper opposite part of the lower link member to receive the second hinge axle rotatable therethrough; and

a second axle combining part formed on the other lower opposite part of the upper link member to receive the second hinge axle rotatable therethrough.

18. The monitor according to claim 17, further comprising:

first and second monitor brackets spaced from each other and combined to the monitor main body, wherein the monitor hinge comprises first and second monitor hinge parts rotatably connecting the upper opposite parts of the upper link member to the first and second monitor brackets, respectively.

19. The monitor according to claim 18, wherein the first monitor hinge part comprises:

a hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a pin accommodating part formed on one side of the first monitor bracket to receive the first end of the hinge pin rotatable therein; and

a pin holding part formed in the one upper opposite part of the upper link member and fitting the second end of the hinge pin therein.

20. The monitor according to claim 18, wherein the second monitor hinge part includes:

a hinge pin formed with a first end having a circular cross section and a second end having a noncircular cross section;

a pin accommodating part formed on one side of the second monitor bracket to receive the first end of the hinge pin to be rotatable therein;

a third hinge axle fitting the second end of the fourth hinge pin therein and rotating coincidentally with the hinge pin; and

a third hinge axle accommodating part formed on the other upper opposite part of the upper link member to receive the third hinge axle to be rotatable therethrough.

21. The monitor according to claim 20, wherein the second monitor hinge part comprises:

a friction spring disposed between the fourth pin accommodating part and the first end of the fourth hinge pin to resist a rotation of the fourth hinge pin.

22. The monitor according to claim 20, wherein the second monitor hinge part comprises:

a tilting restricting part provided on at least one of the first and second monitor hinge parts to restrict a tilt of the monitor main body relative to the upper link member within a predetermined angle range.

23. The monitor according to claim 22, wherein the tilt restricting part comprises:

a tilt restricting washer having a matching hole matching the second end of the fourth hinge pin, and a pair of stoppers protruding from a circumference thereof at a predetermined distance from each other; and

a flat spring combined to one side of the fourth monitor bracket, rotatable between the stoppers of the tilt restricting washer coincidentally with the monitor main body, and restricting the tilt of the monitor main body relative to the upper link member within a predetermined angle range.

24. The monitor according to claim 23, wherein the flat spring comprises:

an elastic projection part disposed between the stoppers of the tilt restricting washer.

25. The monitor according to claim 24, wherein the elastic projection part of the flat spring is deformed to pass at least one of the stoppers of the tilt restricting washer.

26. The monitor according to claim 20, wherein:
the second auxiliary link member comprises,
a pair of linking members coupled between the second base bracket and the link hinge; and

the second base bracket comprises,
a second auxiliary link supporting part coupled with a lower part of the second auxiliary link member, and the first end of the second hinge axle formed with the second auxiliary link combination part coupled with an upper part of the second auxiliary link member.

27. The monitor according to claim 26, wherein:
the second auxiliary link supporting part and the second auxiliary link combination part comprise,

a pair of second pin holes spaced from each other at a predetermined distance;
and
the second auxiliary link member comprises,
opposite end parts formed with second pin through hole to be aligned with the second pin holes, and second link pins inserted in the second pin holes through the second pin through holes.

28. The monitor according to claim 27, wherein:
the third auxiliary link supporting part and the third auxiliary link combination part comprise,

a pair of third pin holes spaced-apart from each other at a predetermined distance; and
the third auxiliary link member comprises,
opposite end parts formed with third pin through hole to be aligned with the third pin holes, and third link pins inserted in the third pin holes through the third pin through hole.

29. The monitor according to claim 26, wherein:
the third auxiliary link member comprises,
a pair of linking members; and
the second end of the second hinge axle comprises,

a third auxiliary link supporting part coupled with a lower part of the third auxiliary link member, and the second end of the third hinge axle formed with the third auxiliary link combination part coupled with an upper part of the third auxiliary link member.

30. The monitor according to claim 17, wherein:
the first auxiliary link member comprises,
a pair of linking members coupled between the first base bracket and the link hinge; and
the first base bracket comprises,
a first auxiliary link supporting part coupled with a lower part of the first auxiliary link member, and the second end of the first hinge axle of the first link hinge part formed with the first auxiliary link combination part coupled with an upper part of the first auxiliary link member.

31. The monitor according to claim 30, wherein:
the first auxiliary link supporting part and the first auxiliary link combination part comprise,
a pair of pin holes spaced-apart from each other at a predetermined distance;
the first auxiliary link member comprises,
opposite end parts formed with a pin through hole to be aligned with the pin holes; and
the first base bracket comprises,
link pins inserted in the first pin holes through the first pin through holes.

32. A monitor including a monitor main body displaying a picture thereon and a base member supporting the monitor main body, the monitor comprising:
a lower link member rotatably combined with the base member;
an upper link member rotatably combined with the monitor main body; and
a link hinge rotatably coupled between the upper link member and the lower link member to move the monitor main body with respect to the base member, wherein the monitor main body forms a main angle with the base member and is moved to be parallel to the base member according to movements of the lower and upper link members.

33. The monitor according to claim 32, wherein the lower link forms a first angle with the base member, the upper link forms a second angle with the monitor main body, the lower

and upper link members form a third angle, and the first, second, and third angles are changed when the monitor main body is moved with respect to the base member.

34. The monitor according to claim 33, wherein the main angle is maintained constant when the second, third, and fourth angles are changed.

35. The monitor according to claim 33, wherein the lower link member is disposed to be parallel to the base member when the monitor main body is disposed to be parallel to the base member.

36. The monitor according to claim 32, further comprising:
a first auxiliary link member having one end rotatably coupled to the base member and another end rotatably coupled to the upper link member.

37. The monitor according to claim 36, wherein the first auxiliary link member is disposed on a line different from a center line passing through an axis of the link hinge.

38. The monitor according to claim 36, further comprising:
a base hinge fixedly coupled to the base member, wherein the one end of the first auxiliary link member is rotatably coupled to the base hinge.

39. The monitor according to claim 38, wherein the base hinge protrudes from the base member toward the monitor main body so that the lower member rotatably coupled to the base hinge is disposed to be parallel to the base member when the monitor main body is moved to be parallel to the base member.

40. The monitor according to claim 39, wherein the lower and upper link members form a maximum angle and a minimum angle according to a movement of the monitor main body with respect to the base member.

41. The monitor according to claim 40, wherein the lower and upper link members form the minimum angle when the monitor main body is moved to be parallel to the base member, and the lower and upper link members form the maximum angle when the monitor main body is moved to be perpendicular to the base member.

42. The monitor according to claim 40, wherein the main angle is maintained constant while the lower and upper link members are moved between the maximum angle and the minimum angle.

43. The monitor according to claim 40, further comprising:
a tilt restriction part disposed between the monitor main body and the upper link member to restrict a movement of the monitor main body with respect to the base member between the minimum angle and the maximum angle and allow the monitor main body to move to be parallel to the base member.

44. The monitor according to claim 36, wherein the first auxiliary link member is disposed on a line different from a center line passing through axes of the link hinge and the base hinge.

45. The monitor according to claim 44, wherein the first auxiliary link member comprises:
a plurality of link members disposed on lines from the center line passing through axes of the link hinge and the base hinge.

46. The monitor according to claim 45, wherein the link members of the first auxiliary link member are disposed to be parallel to each other when the upper and lower link members are moved with respect to the base member.

47. The monitor according to claim 46, wherein the link members of the first auxiliary link member are disposed to be parallel to the lower link member when the monitor main body moves with respect to the base member.

48. The monitor according to claim 36, further comprising:
a second auxiliary link member having one end rotatably coupled to the base member and another end rotatably coupled to the link hinge; and
a third auxiliary link member having one end rotatably coupled to the link hinge and another end rotatably coupled to the monitor main body.

49. The monitor according to claim 48, wherein the second auxiliary link member has one end rotatably coupled to the base member and another end rotatably coupled to the link hinge.

50. The monitor according to claim 49, wherein the second auxiliary link member is disposed on a line different from a center line passing through an axis of the link hinge.

51. The monitor according to claim 49, wherein the third auxiliary link member has one end rotatably coupled to the monitor main body and another end rotatably coupled to the link hinge.

52. The monitor according to claim 51, wherein the third auxiliary link member is disposed on a line different from a center line passing through an axis of the link hinge.

53. The monitor according to claim 51, further comprising:
a base hinge fixedly coupled to the base member, and rotatably coupled to the one end of the second auxiliary link member; and
a monitor hinge fixedly coupled to the monitor main body, and rotatably coupled to the one end of the third auxiliary link member.

54. The monitor according to claim 53, wherein the second auxiliary link member comprises:
a plurality of link members disposed on lines parallel to a center line passing through axes of the link hinge and the base hinge.

55. The monitor according to claim 54, wherein the link members of the second auxiliary link member are disposed to be parallel to each other when the upper and lower link members are moved with respect to the base member.

56. The monitor according to claim 54, wherein the lines corresponding to the respective link members of the second auxiliary link member are deviated from the center line passing through axes of the link hinge and the base hinge by a distance.

57. The monitor according to claim 53, wherein the third auxiliary link member

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63. A monitor comprising a monitor main body displaying a picture thereon and a base member supporting the monitor main body, further comprising;

- a lower link member rotatably combined with the base member;
- an upper link member rotatably combined with the monitor main body;
- a link hinge rotatably coupled between the upper link member and the lower link member to allow the monitor main body to move with respect to the base member according to movements of the lower and upper link member;
- an auxiliary link member having one end rotatably coupled to the base member and another end rotatably coupled to the upper link member; and
- another auxiliary link member having one end rotatably coupled to the base member, another end rotatably coupled to the monitor main body, and a middle portion rotatably coupled to the link hinge.

64. The monitor according to claim 63, wherein the another auxiliary link member comprises:

- a second auxiliary link member having one end rotatably coupled to the base member and another end rotatably coupled to the link hinge; and
- a third auxiliary link member having one end rotatably coupled to the link hinge and another end rotatably coupled to the monitor main body.

65. The monitor according to claim 63, wherein:
the first auxiliary link member comprises,

- first link members coupled between the base member and the upper link member and arranged in a first direction perpendicular to a moving direction of the monitor main body with respect to the base member; and

the another auxiliary link member comprises,

- a plurality of second link members coupled between the base member and the link hinge and arranged in a second direction parallel to the moving direction, and
- a plurality of third link members coupled between the link hinge and the monitor main body and arranged in the first direction perpendicular to the moving direction.